

# Abstract

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## **INTELLIGENT MAXIMUM POWER TRACKING and INVERTER VECTOR CONTROL OF GRID-CONNECTED PV SYSTEMS**

This paper proposes a maximum power point tracking scheme using neural networks for a grid connected photovoltaic system. The system is composed of a photovoltaic array, a boost converter, a three phase inverter and grid. The neural network proposed can predict the required terminal voltage of the array in order to obtain maximum power. The duty cycle is calculated; the boost converter switches are controlled. Vector control with hysteresis current technique is applied on the three phase inverter so that the output voltage of the converter remains constant at any required set point. The complete system is simulated using MATLAB/SIMULINK software under sudden weather conditions changes. Results show accurate; fast response of the converter; inverter control; which leads to fast maximum power point tracking.